ENVIROPURE SYSTEMS

EPW Food Waste Decomposition System Overview

The EPW System

- Hyper-accelerated food waste decomposition - 24 hour process period
- Mechanical and biological break down of food wastes into H2O, CO2 and minimal suspended solids (TSS < 50mg/L).
- Bi-product is ozone prepared for reuse. (irrigation, wash downs, etc.)
- NO odors,
  NO sludge build-up,
  NO system clean outs

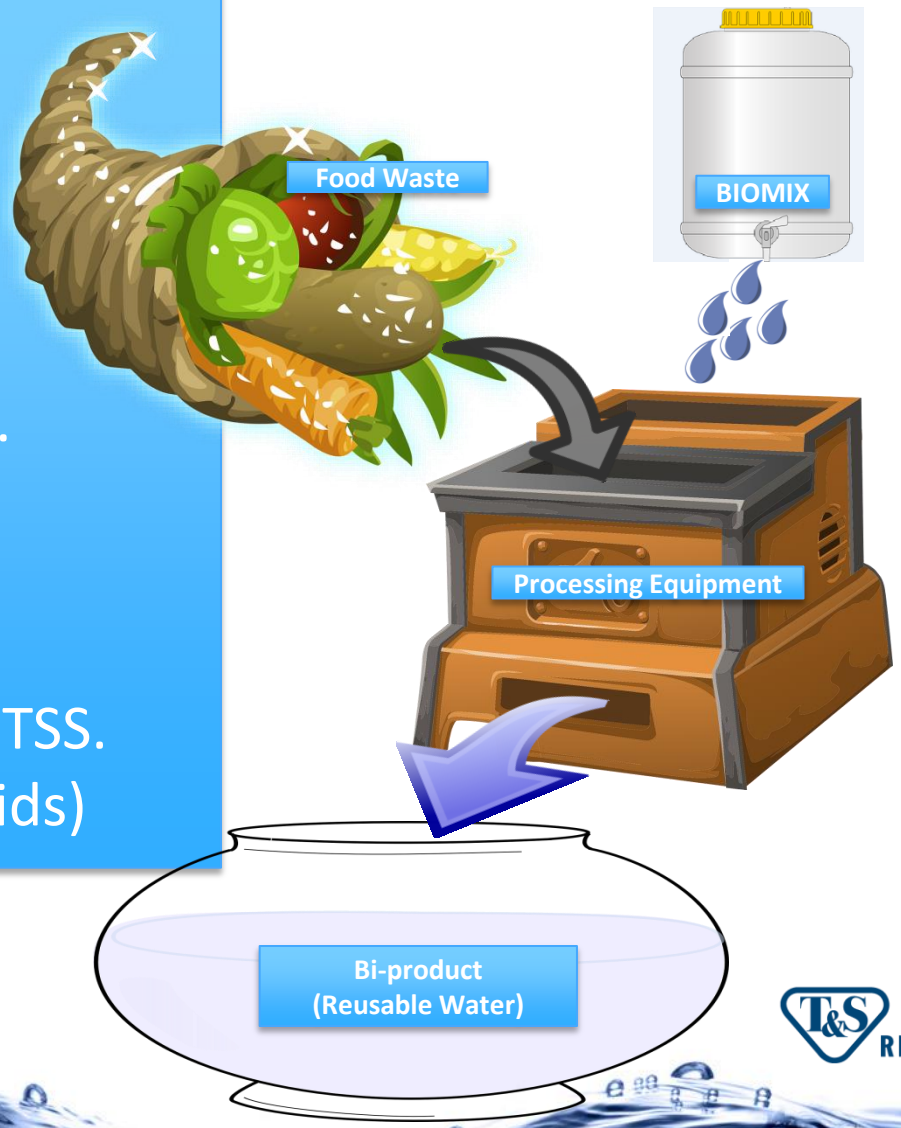
T&S RELIABILITY BUILT IN™

Overview

ENVIRO PURE SYSTEMS

Process Flow:

- Food waste enters equipment.
- ***BioMix*** is introduced.
- 24 hour processing.
- Bi-product < 50gm/L TSS. (Total Suspended Solids)



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WHERE DOES THE FOOD WASTE GO?

- Food is primarily *Carbon* (**C**) *Oxygen* (**O**) and *Hydrogen* (**H**).
  (i.e. Carbohydrates, Fats, Oils, Grease, and Proteins including amino acids with Phosphorus & Nitrogen)

- Aerobic bacteria combine **OH**s and **HC**s to produce H_2O and CO_2 while consuming Phosphorus and Nitrogen.

- **RESULT = SOLIDS VIRTUALLY GONE**

  NO sludge build-up and NO system clean out required, …EVER!

*** Each processed ton yields ~200 gallons of reusable water.**

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EPW SYSTEM FUNDAMENTALS

- **BACTERIA** in food is what molecularly breaks it down.
- 3 different types of **BACTERIA** are present.
  - **AEROBES** function with O_2
  - **ANAEROBES** function without O_2
  - **FACULTATIVES** function with & without O_2

- Each have different macro & micro **NUTRIENT** requirements**.**
  - They compete for the ***same*** growth *substrate* & *organic material.*
  - **MICRONUTRIENTS** are typically the ***limiting factor*** for growth.
- ***MICRONUTRIENTs*** and ***O_2*** determine bacterial ***dominance***.

ENVIROPURE SYSTEMS

WHAT IS BIOMIX?

- BioMix is an ***all natural***, non-toxic, biodegradable **NUTRIENT** mix.
- Contains **Vitamins** and **Amino Acids.**
- ***Selectively*** supports **BACTERIA** in food waste resulting in ***targeted multiplication***.
- Promotes **Aerobic Digestion** while discouraging *Anaerobic Digestion*.

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WHAT IS BIOMIX?

BIOMIX DOES CONTAIN:

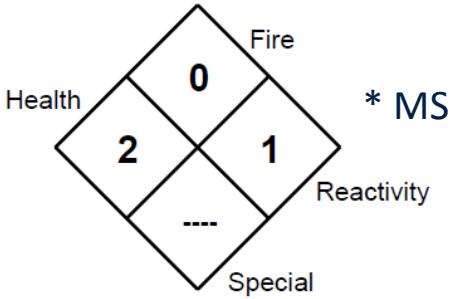
- ☑ **MINERALS**
  Copper, Magnesium, Potassium, Zinc
- ☑ **NUTRIENTS**
  Sulphate, TKN
- ☑ **AMINO ACIDS**
  Ascorbic, Benzoic, Lipoic
- ☑ **VITAMINS**
  B6/B12, C, E and K

BIOMIX DOES NOT CONTAIN:

- ☒ **BACTERIA**
- ☒ **ENZYMES**
- ☒ **TOXIC CHEMICALS***
- ☒ **MASKING AGENTS**

NFPA 704 DESIGNATION
HAZARD RATING

4=Extreme
3=High
2=Moderate
1=Slight
0=Insignificant



* MSDS is available upon request.

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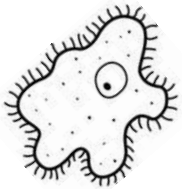
HOW BIOMIX WORKS

DECOMPOSITION PROCESSES

Complex Substrate

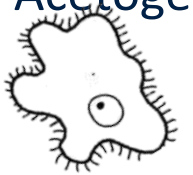
- Carbohydrates
- Sugars
- Fats, Oils & Grease
- Proteins

Hydrolytic Bacteria



- Simple Sugars
- Organic Acids
- Amino Acids
- Enzymes

Acetogenic Bacteria



- Acetate
- CO_2
- H_2
- H_20

without O_2 present

with O_2 present

with O_2 present

Anaerobic Bacteria

- CO_2
- CH_4
- H_2S

10% conversion Acetic Acid to CO_2

Aerobic Bacteria

- CO_2
- H_20

75% conversion Acetic Acid to CO_2

Facultative Bacteria

- CO_2
- H_20

90% conversion Acetic Acid to CO_2

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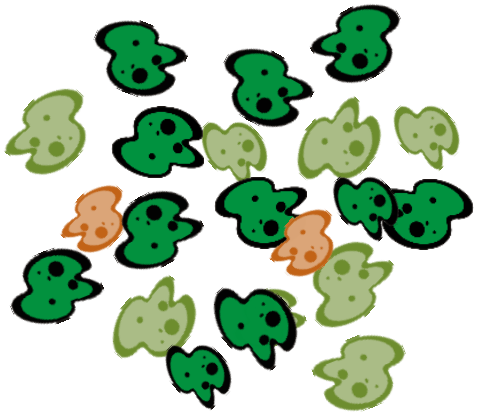
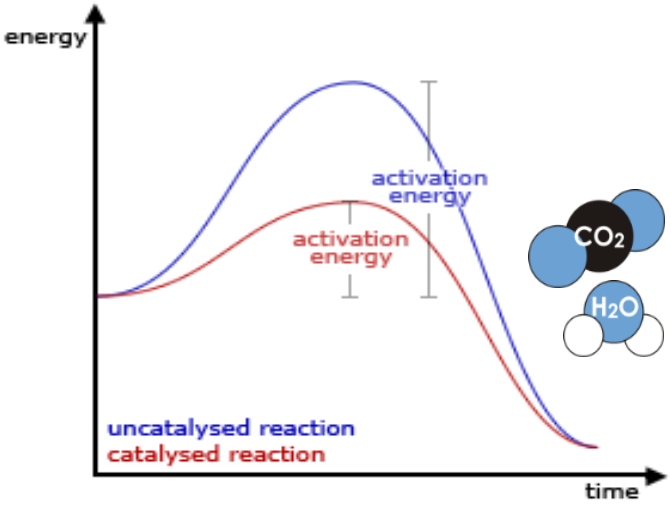
HOW BIOMIX WORKS

- Provides specific ***MICRONUTRIENTS*** targeted at the **AEROBIC** and **FACULTATIVE** bacteria in food waste.
- Promotes **DOMINATION** by *SELECTIVE GROWTH* of **AEROBIC** and **FACULTATIVE** over ***ANAERBIC*** bacteria.
- Also acts as a **BIOCATALYST** to *ACCELERATE* the hydrolytic reaction in the decomposition process.
- ***Breaks down FOGs***; reducing / eliminating foam, scum & sludge generation.
- Suppresses **FILAMENTOUS** bacteria by starvation; discouraging *Hydrogen Sulfide* (odors) production.





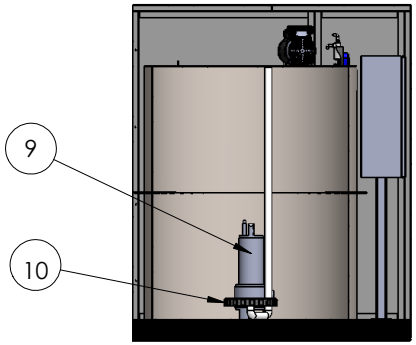
T&S RELIABILITY BUILT IN™

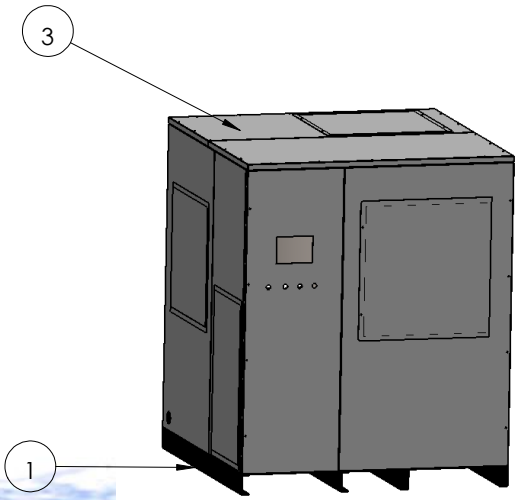
Equipment Review

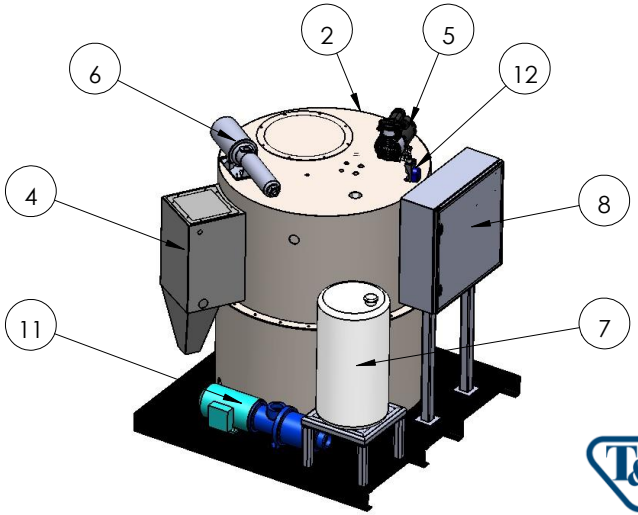
RELIABILITY BUILT IN™

Equipment Review

ITEM NO.	Part Description
1	Base Assembly
2	Tank Assembly
3	Cabinet
4	Filter Assembly
5	Air Compressor
6	High Pressure Filter Clean Pump
7	Bio Mix
8	Control Panel
9	Stir Pump
10	Airator
11	Slurry Pump
12	Bio-Pump







RELIABILITY BUILT IN™

Equipment Review

ENVIRO PURE SYSTEMS

T&S RELIABILITY BUILT IN™

Equipment Review

ENVIROPURE SYSTEMS

A – Food Waste Feed

B1 – Fresh Water Feed
B2 – High Pressure Water Pump
B3 – High Pressure Spray Nozzle

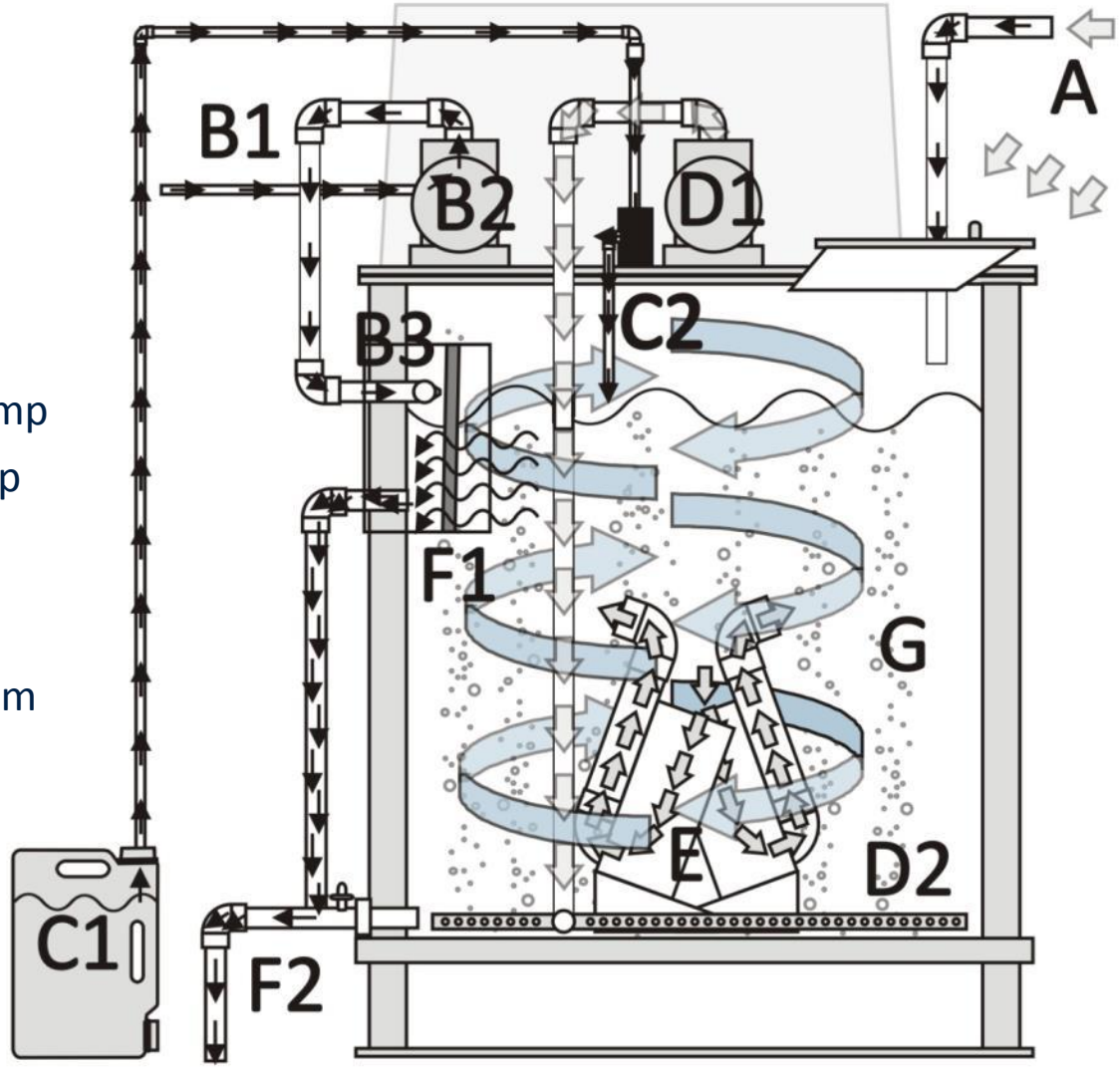
C1 – BioMix Additive
C2 – Peristaltic Dosing Pump

D1 – Air Compressor Pump
D2 – Oxygen Diffusers

E – Internal Stir / Grinder Pumps

F1 – Micro Filtration System
F2 – Effluent Exit

G – Reaction Chamber

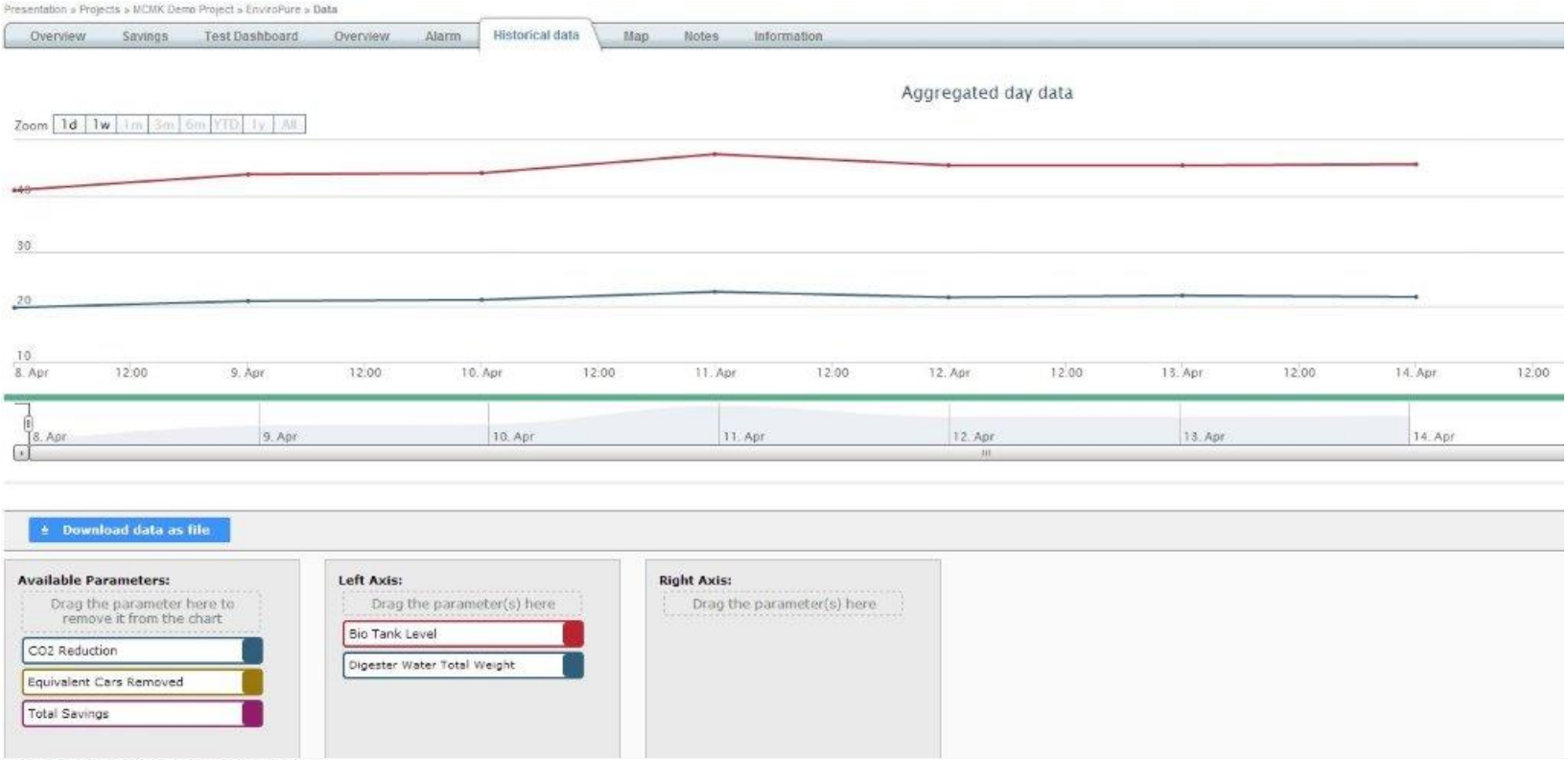


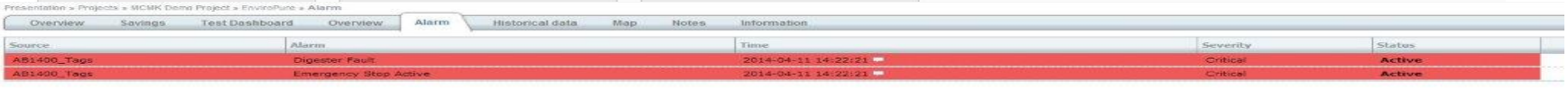
ILITY BUILT IN™

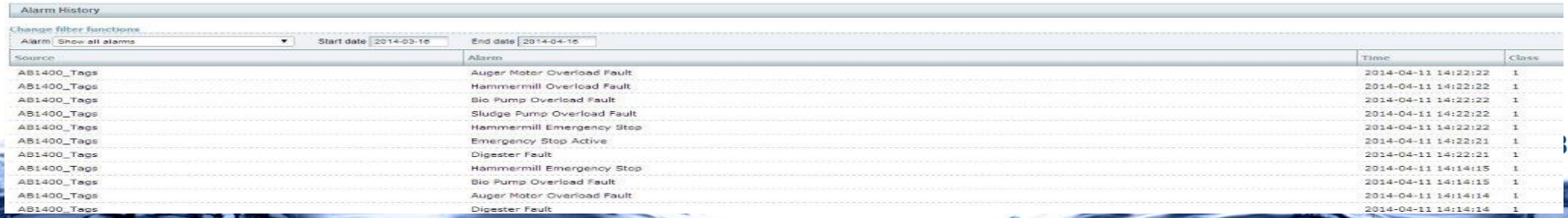
Screen View of EP

ELIABILITY BUILT IN™

Pounds Diverted, Carbon Footprint Calculations etc…







EPW SYSTEM Bi-PRODUCTS

ENVIROPURE SYSTEMS

- Nutrient depleted gray water effluent
- Safe for irrigation, wash downs, etc.
- Safe for municipal waste water sewer systems - Complies with known WWTP requirements.

Waste Water Discharge Criteria	Municipal Limits	EnviroPure Effluent
	mg / L	mg / L
Biochemical Oxygen Demand (BOD)	300-500	25-30
Fats, Oils & Grease (FOG's)	100-150	0-10
Total Suspended Solids (TSS)	300-500	25-35

T&S RELIABILITY BUILT IN™

Waste Water Regulations

Maat Environmental Engineering Corp.

5-Day Study.

A.AT ENVIRC>NN\ENTAL -n-In--rln9 Corp

1273 North Service Road, E. F2
Oakville, ON, L6H 1A7
Tel: 905 829 1749
Fax: 905 829 5859

The Performance of EPW-XXX with the addition of a Biological Additive

Preliminary Evaluation
A 5-Day Study

Project #7282

Prepared For:

Enviro Pure Systems Inc.
First Canadian Place
100 King Street West, Suite 5700
Toronto, Ontario, M5X 1C7

Prepared By:

Maat Environmental Engineering Corp.
1273 North Service Road East, Unit F2
Oakville, Ontario
L6H 1A7

September 7, 2010

ENVIRO PURE SYSTEMS

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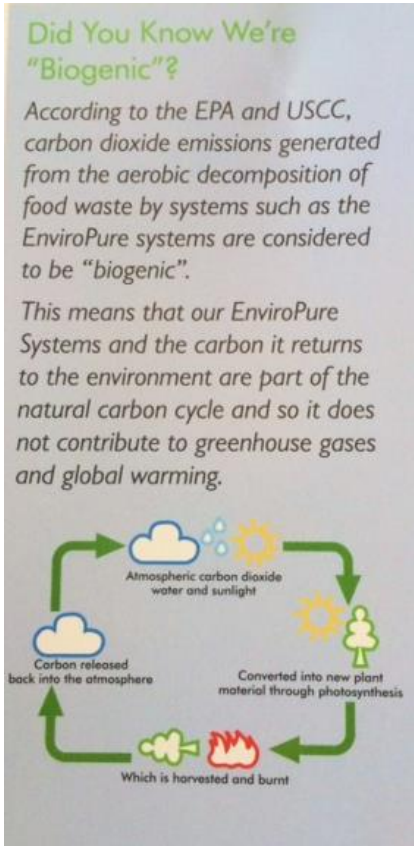
Biogenic Produced or brought about by living organisms

Table 2
Methane, Oxygen, Temperature and pH Results - 5-Day Study
Performance of EPW-XXX with the addition of BIOLOGIC(R)

	CH4 (%)		O2 (%)		CO2 (%)		Temp (oC)		pH	
	Reactor	Ambient	Reactor	Ambient	Reactor	Atmospheric	Reactor	Ambient	Reactor	Effluent
Day 1	0	0	20.9	20.9	n/a		30	26	6.1	6.1
Day 2	0	0	20.9	20.9	0.25		31	26	5.9	5.9
Day 3	0	0	20.9	20.9	<0.25	0.039	32	26	5.8	5.8
Day 4	0	0	20.9	20.9	0.25		32	26	5.3	5.7
Day 5	0	0	20.9	20.9	<0.25		32	26	5.6	5.8

n/a - not applicable

New BioMix formula yields pH = 6.6~6.8



- **Carbon dioxide CO_2 levels outdoors**
  300 ppm to 400 ppm or 0.03% to 0.040% in concentration
- **Carbon dioxide CO_2 levels indoors in occupied buildings**
  600 ppm to 800 ppm or 0.06% to 0.08% in concentration
- **Carbon dioxide CO_2 levels indoors in an inadequately vented space with heavy occupation**
  1000 ppm or 0.10% in concentration.

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Waste Water Regulations

Maat Environmental Engineering Corp.

Water Sample Analysis.

ENVIRO PURE SYSTEMS

Maxxam Analytics

Your Project#: 7282 OPUS
YourC.O.C.#: 00579544

Attention: Derek Maat
Maat Environmental Engineering Corp
1273 North Service Rd E
Unit F2
Oakville, ON
L6H 1A7

Report Date: 2010/09/07
This report supersedes all previous reports with the same Maxxam job number

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: 8082560
Received: 2010/08/18, 17:27

Sample Matrix: Water
#Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Method Reference
Biological Oxygen Demand (BOD)	2	N/A	2010108125	CAM SOP-00427	APHA 52108
Animal and Vegetable Oil & Grease	2	N/A	2010108119	CAM SOP-00326	SM 5520 B
Total Oil and Grease	2	2010108119	2010108119	CAM SOP-00326	EPA 1664A
TPH (Heavy Oil) (1)	2	2010108119	2010108119	CAM SOP-00326	SM 5520F
Total Suspended Solids	1	NIA	2010108119	CAM SOP-00428	SM 25400
Low Level Total Suspended Solids	1	NIA	2010108119	CAM SOP-00428	SM 25400

- RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Note: TPH (Heavy Oil) is equivalent to Mineral / Synthetic Oil & Grease

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

ANTONELLA BRASIL, Project Manager
Email: Abrasil@maxxamanalytics.com
Phone# (905) 817-5817

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E). signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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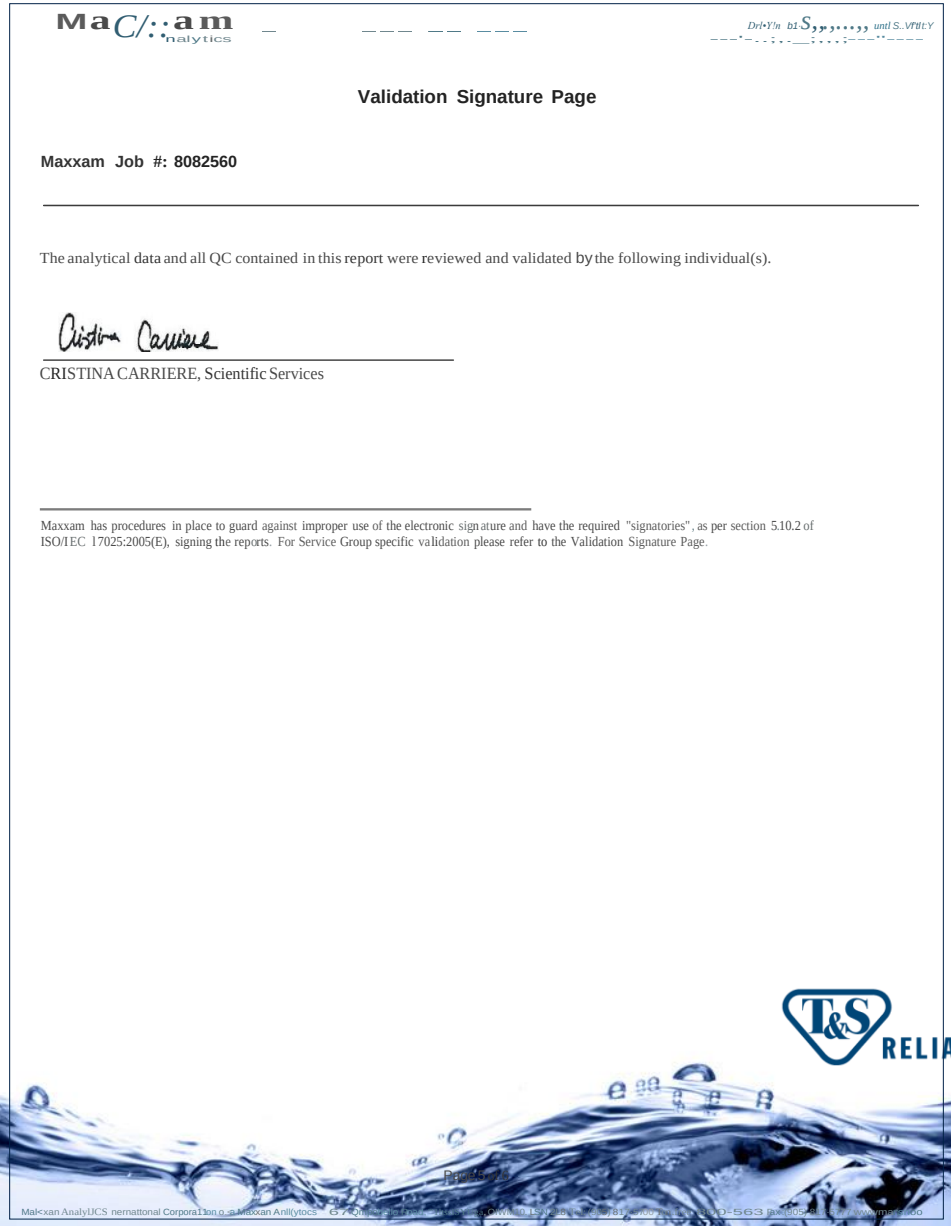
Total cover pages: 1

Waste Water Regulations

Maat Environmental Engineering Corp.

Water Sample Analysis.



Maxxam Analytics

Validation Signature Page

Maxxam Job #: 8082560

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

CRISTINA CARRIERE, Scientific Services

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T&S RELIABILITY BUILT IN™

EPW SYSTEM Bi-PRODUCTS

Table 1
TOG, BOD, TSS Results

Maxxam Job Number		B0B2560		B0B4145		B0B4145		B0B5245		B0B5795	
	Units	Reactor	Effluent	Reactor	Effluent	Reactor	Effluent	Reactor	Effluent	Reactor	Effluent
Calculated Parameters											
Total Animal/Vegetable Oil and Grease	mg/L	ND	ND	39.8	3.2	10.7	1.3	48.7	ND	90.1	4.4
Inorganics											
Total BOD	mg/L	330	8	380	29	240	3	2500	66	2300	25
Total Suspended Solids	mg/L	340	11	750	43	1100	6	1900	35	2000	44
Petroleum Hydrocarbons											
Total Oil & Grease	mg/L	ND	ND	41.2	3.2	10.7	1.3	52.0	ND	105	5.6
Total Oil & Grease Mineral/Synthetic	mg/L	ND	ND	1.4	ND	ND	ND	3.3	ND	14.6	1.2

ND - Not Detected Above Laboratory Reportable Detection Limit (RDL) - See Certificate of Analysis in Appendix C for RDLs

ENVIROPURE SYSTEMS

How much ***water*** does the system use?

- **None**. We reuse our ozone treated bi-product water, once operational.

How much ***electricity*** does the system use?

- For EPW-1000 and higher systems:
  - Ave. System Consumption is 7.68 Kw/h per day
  - At ***10¢*** per kilowatt hour (***apply your rate***)
  - 7.68 x 365 Days = 2803.2 x ***.10***/Kw = $***280.32*** *per year.*
- Below EPW-1000 systems:
  - Ave. System Consumption is 5.76 Kw/h per day
  - At ***10¢*** per kilowatt hour (***apply your rate***)
  - 5.76 x 365 Days = 2102.4 x ***.10***/Kw = $***210.24*** *per year.*

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EnviroPure Customers

WOLFPACK
N.C. STATE

http://

Baldor

UNIVERSITY OF ILLINOIS AT URBANA-CHA

Pilot Programs Underway

- Whole Foods
- Walmart Canada

In Discussion

- Food Lion
- Loblaw's

Installations

ENVIROPURE SYSTEMS

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Thank you!

For More Information:

Rob Silveria
MSolTec Energy Research
Ph: (951)977-0033
rsilveria@msoltec.com

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